Rejection of Claims 2, 3, and 7 Under 35 USC § 112

The Examiner has rejected claims 2, 3, and 7 under 35 USC § 112, second paragraph, for being indefinite. In view of the amendments to claims 1 and 3, it is respectfully suggested that this rejection is obviated.

The reference in claim 1 to "a gaseous fraction" provides the antecedent required for claim 2.

The amendment to claim 3 corrects the reference to the improper antecedent that is noted by the Examiner.

The amendment to claim 1 defining the membrane separation means as having a membrane separation selectivity and a hydrogen separation selectivity provides the antecedent required for claim 7.

Rejection of Claims 1-7 Under 35 USC § 103 Over U.S. Patent 4,605,493

The Examiner has rejected claims 1-7 as being obvious over U.S. Patent 4,605,493 to Harandi. This rejection is traversed. Reconsideration and a withdrawal of the rejection are respectfully requested.

The Examiner recognizes that the Harandi patent fails to disclose a use of a hydrogen separation membrane for processing an FCC gaseous fraction before passing it to an absorber separation section. But, the Examiner argues that it is obvious to modify the disclosed process of the Harandi patent; because, allegedly, hydrogen is not a critical component in the process of Harandi. The Examiner cites no secondary references to be combined with the Harandi patent so as to provide the missing hydrogen separation means. Moreover, nowhere in the Harandi patent is there any teaching or suggestion that a membrane separation means may be used in a manner as is recited in the Applicants' claims.

Applicants' specification does, however, indicate that there are advantages to the use of a hydrogen separation membrane in the manner as recited in their claimed invention. For instance, Applicants indicate that the efficiency of propene recovery in their process is improved by first separating part of the hydrogen present in the FCC gaseous fraction prior to feeding it to the rectifying absorber section. *See* the specification at page 3, lines 17-20. The Applicants also indicate that there are other advantages, such as, the ability to use smaller distillation units in newly designed FCC units or the ability to debottleneck existing FCC units. *See* the specification at page 3, lines 20-23. There are a number of other advantages noted by the Applicants.

Nowhere in the Harandi patent is there any suggestion that these benefits and advantages are achievable by using the hydrogen separation means as recited in the Applicants' claims.

Throughout the Examiner's Office Action it is stated that various elements of Applicants' claimed invention are not disclosed in the Harandi patent, but the Examiner nevertheless argues that it is obvious to provide such missing elements. The Examiner, however, has not pointed to any teachings in the single reference which suggest that the process taught in the Harandi patent may be modified in the manner suggested by the Examiner.

Considering that all the claim limitations are not disclosed in the single, cited Harandi patent, and neither are the advantages, it is respectfully suggested that claims 1 through 7 are patentable over the cited reference. Therefore, early allowance of these claims is respectfully requested.

Respectfully submitted,

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APPENDIX

1. (Amended) Process to separate propene from gaseous fluid catalytic cracking products by performing the following steps:

a) separating a feed mixture comprising the gaseous products, propene and other saturated and unsaturated hydrocarbons ranging from methane to hydrocarbons having a boiling point of 250 °C as obtained in a fluid catalytic cracking process into a hydrocarbon-rich liquid fraction and a hydrogen containing gaseous fraction,

b) separating, at a temperature between 50 and 100 °C, the hydrogen containing gaseous fraction into a hydrogen-rich gaseous fraction and a hydrocarbon-rich gaseous fraction by [means of a] membrane separation means defined by having a methane separation selectivity and a hydrogen separation selectivity [at a temperature of between 50 and 100 °C],

c) supplying the hydrocarbon-rich gaseous fraction obtained in step (b) to an absorber section, wherein to the top or discharge end of the absorber section a liquid hydrocarbon mixture is supplied to, which hydrocarbon mixture is poor in propene, and obtaining in said absorber section a lower boiling gaseous fraction rich in gaseous products having a boiling point of ethane or below, and

d) supplying the hydrocarbon-rich liquid fraction obtained in step (a) to a stripper section and obtaining in said stripper section a gaseous fraction and a higher boiling fraction comprising propene and hydrocarbons having a boiling point higher than ethane.

3. (Twice Amended) The p[P]rocess [according to any one of claims 1-2]of claim 1, wherein the higher boiling [liquid] fraction [obtained in the absorber section] is supplied to step (a).

6. (Twice Amended) The p[P]rocess [according to any one of claims 1-5]of claim 1, wherein the hydrogen separation selectivity of the membrane separation in step (b) is greater than 20, wherein the hydrogen separation selectivity is defined as the permeability ratio of hydrogen over methane.[.]